

## INTERNATIONAL SEARCH REPORT

PCT/IB 04/50023

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 H02M3/156 G05F1/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H02M G05F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 959 443 A (LITTLEFIELD TROY J) 28 September 1999 (1999-09-28) column 2, line 8 – line 19; figures 1A,1B	1-4,6, 8-10
Y	-----	11
A	US 6 016 260 A (HEERINGA SCHELTE) 18 January 2000 (2000-01-18)	1-10
Y	column 4, line 16 – line 18; figure 2 -----	11
A	US 5 180 964 A (EWING GERALD D) 19 January 1993 (1993-01-19) figures 1a-11 figure 3 -----	1-11

Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## ° Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

29 June 2004

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07/07/2004

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 5959443	A	28-09-1999	JP	11220875 A		10-08-1999
US 6016260	A	18-01-2000	CN EP WO JP	1132299 B 0958648 A1 9930409 A1 2001511340 T		24-12-2003 24-11-1999 17-06-1999 07-08-2001
US 5180964	A	19-01-1993	NONE			